

Locking device for vehicles, in particular for aircraft

The invention relates to a locking device for vehicles, in particular for aircraft having an actively driven drive element with an input drive shaft and an output drive shaft connected directly or indirectly to it.

Conventionally, locking devices are known which lock and/or unlock doors, aircraft doors or the like by means of a motor element, followed by a complex transmission element and redundant mechanical springs connected to it. Locking devices such as these form a security mechanism and mechanically operate appropriate safety bolts or the like in response to appropriate signals. Conventional locking devices have the disadvantage that they are very heavy, complex to manufacture and require intensive maintenance for their operation. Furthermore, in some cases, they are unreliable, which is undesirable. Furthermore, they require a large installation area which is likewise undesirable, with a very high natural weight.

The US 6,310,455 B1 discloses a positioning and actuating drive which operates with a DC electric motor. In this case, a rotor is mounted coaxially in a stator such that it can rotate, and drives a transmission. In this case, the transmission and the motor have corresponding associated position angle sensors, motor angle sensors, which identify and determine the position exactly.

The present invention is thus based on the object of providing a locking device of the type mentioned initially, which overcomes the stated disadvantages and by means of which the reliability and the operability of the locking devices are

intended to be significantly improved. A further aim is to save manufacturing costs and maintenance costs, while reducing the natural weight.

The features of patent claims 1 and 2 have led to this object being achieved.

The present invention, a drive element is, for example, in the form of an electric motor, but may also be of a pneumatic, hydraulic or electromechanical type. The present invention is not restricted to this.

In this case, the present invention has been found to be particularly advantageous for this purpose, in particular in order to improve the reliability, to provide a magnetically operated resetting for the output drive shaft or the input drive shaft to a rest or safe position in the event of a failure or if the drive element is switched off, which rest or safe position can be selected. The locking device is thus preferably formed from two components, with an active drive element and a passive part, which are coupled to one another. The passive part is formed from two permanent magnets, with one permanent magnet being connected to the input and/or output drive shaft, and the other permanent magnet being firmly connected to the housing. The two permanent magnets preferably engage with one another, so that, particularly in the event of failure of the drive element, the input or output drive shaft can automatically be mechanically moved to a safe position. The drive element can move the input drive shaft or the output drive shaft to different, selectable angles, which can be set precisely, up to 360° with respect